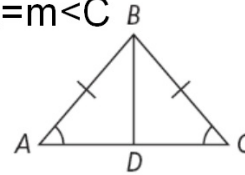


Warm-up: Wednesday, December 15, 2010

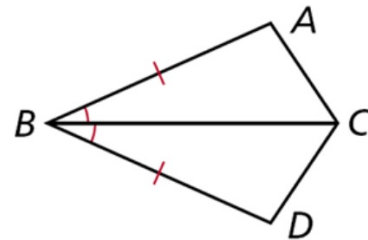
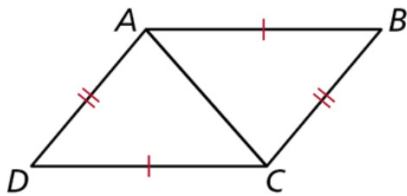
4.3 and 4.4 Quiz Tomorrow!

Given: \overline{BD} is the angle bisector of $\angle ABC$. $BA=BC$, $m\angle A=m\angle C$
 \overline{BD} is the perpendicular bisector of \overline{AC} .

Prove: $\triangle ADB \cong \triangle CDB$



4-2: Triangle Congruence- SSS and SAS



Objectives

Apply SSS and SAS to construct triangles and solve problems.

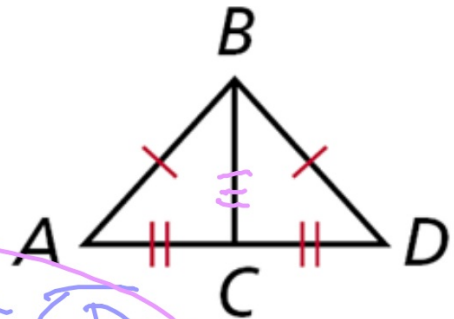
Prove triangles congruent by using SSS and SAS.

Remember!

Adjacent triangles share a side, so you can apply the Reflexive Property to get a pair of congruent parts.

Example 1: Using SSS to Prove Triangle Congruence

Use SSS to explain why $\triangle ABC \cong \triangle DBC$.



We know that

$\overline{AB} \cong \overline{BD}$ and $\overline{AC} \cong \overline{CD}$

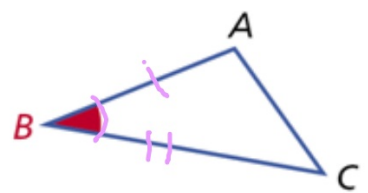
because they are given. $\overline{BC} \cong \overline{BC}$

because of the reflexive property.

Since we have 3 \cong sides, $\triangle ABC \cong \triangle DBC$
by SSS.

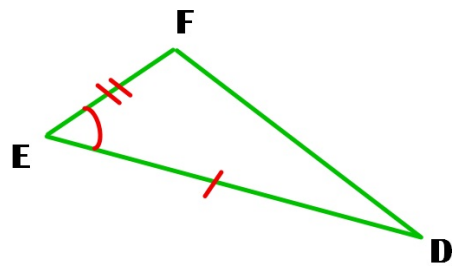
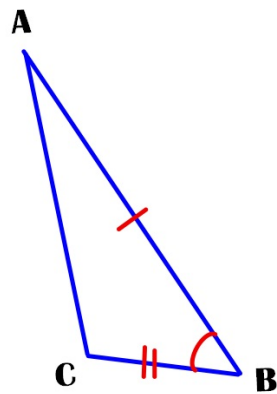
An **included angle** is an angle formed by two adjacent sides of a polygon.

$\angle B$ is the included angle between sides AB and BC .



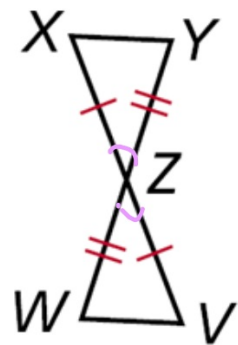
Caution

The letters SAS are written in that order because the congruent angles must be between pairs of congruent corresponding sides.



Example 2: Engineering Application

The diagram shows part of the support structure for a tower. Use SAS to explain why $\triangle XYZ \cong \triangle VWZ$.



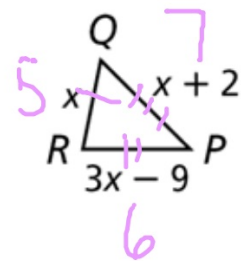
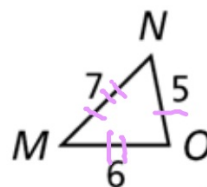
We know that $\overline{XZ} \cong \overline{VZ}$ and $\overline{YZ} \cong \overline{WZ}$ because they are given.

We know that $\angle XZY \cong \angle VZW$ because of the V.A.T. $\triangle XYZ \cong \triangle VWZ$ because of the SAS postulate.

Example 3A: Verifying Triangle Congruence

Show that the triangles are congruent for the given value of the variable.

$\triangle MNO \cong \triangle PQR$, when $x = 5$.

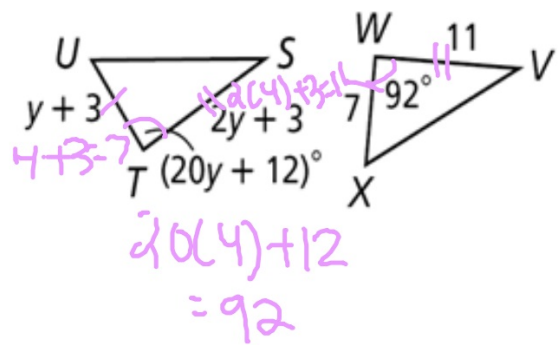


$\triangle MNO \cong \triangle PQR$ by SSS

Example 3B: Verifying Triangle Congruence

Show that the triangles are congruent for the given value of the variable.

$\triangle STU \cong \triangle VWX$, when $y = 4$.

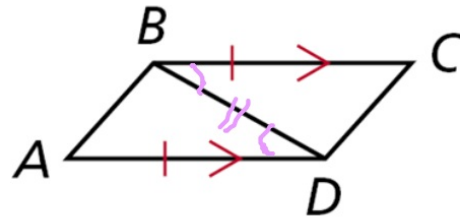


The \triangle s are \cong
SAS.

Example 4A: Proving Triangles Congruent

Given: $\overline{BC} \parallel \overline{AD}$, $\overline{BC} \cong \overline{AD}$

Prove: $\triangle ABD \cong \triangle CDB$



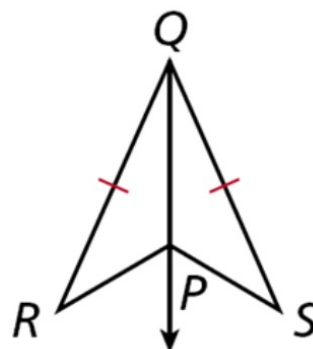
Statements	Reasons
$\overline{BC} \parallel \overline{AD}$	given
$\overline{BC} \cong \overline{AD}$	given
$\angle DBC \cong \angle ADB$	Alt. int. \angle thm.
$\overline{BD} \cong \overline{BD}$	reflexive

$$\triangle ABD \cong \triangle CDB \text{ SAS}$$

Example 4B: Proving Triangles Congruent

Given: QP bisects $\angle RQS$. $QR \cong QS$

Prove: $\triangle RQP \cong \triangle SQP$



Statements	Reasons
1) QP bisects $\angle RQS$, $QR \cong QS$	1) given
2) $\angle RQP \cong \angle PQS$	2) Def of Angle Bisector
3) $\overline{QP} \cong \overline{QP}$	3) Reflexive
4. $\triangle RQP \cong \triangle SQP$	4. SAS

